

means capable of designating a plurality of different magnifications. The apparatus also includes a means capable of automatically detecting beats per minute (BPM) of the input audio signal, or a beat period of the input audio signal, for changing the BPM or beat period according to a magnification designated by the magnification designating means, and for changing the tempo of the input audio signal in accordance with the changed BPM or changed beat period.

As a result of the claimed configuration, it is easy to change the tempo of the input music signal in accordance with a magnification designation by the magnification designating means, thereby easily producing a music signal with its tempo changed as desired. With the use of the claimed invention, a BPM or a beat period of an input audio signal may be changed by only operating the magnification designating means, to quickly and directly change the tempo of the input musical sound. In this way, a user of the apparatus is allowed to easily set a desired beat period and a desired BPM, thereby improving operability for the audio signal processing apparatus. Another nonobvious and novel result of the claimed invention is that the apparatus is capable of producing processed audio information having a rhythmical correlation with original unprocessed audio information, thus having a more enjoyable result. For example, when audio information, such as music is processed, it is usually desired that the processed audio information have a rhythmical correlation with an original unprocessed audio information (i.e., the music information before it is processed). This is due to the fact that when the rhythm of the processed audio information is  $n$  or  $1/n$  ( $n$  being an integer) times the rhythm of the original music information, and then the processed music information and the original unprocessed information are reproduced at the same time, a listener will

sense a compatible feeling between these two different music sounds. In contrast, if the processed audio information does not have a rhythmical correlation with an original unprocessed music information, a listener will sense an incompatible feeling between these two different music sounds, making it less enjoyable to listen to the produced music sounds.

In order to adjust the rhythm of an inputted music sound so as to make the rhythm to be  $n$  or  $1/n$  times the rhythm of an original unprocessed music information, a user operating a conventional audio signal processing apparatus, such as described by Marx, is required to rotate an adjustment dial until the rhythm of the inputted music sound adjusted to a desired rhythm. This sort of adjustment depends completely on a user's feeling and can take a relatively long time to complete the adjustment. In some cases, a user may be completely unable to achieve a rhythmic correlation as described above. However, the claimed invention includes the magnification designating means to designate a desired magnification, which makes it possible to change and adjust the rhythm of an inputted music sound by adjusting the BPM or beat period, such as by  $n$  or  $1/n$  times, thereby making it easy to produce the rhythmical correlation as described above.

Marx is directed to an audio mixer for use with audio input devices which provide a number of audio effects and editing features. Marx describes a user interface 36 which presents an array of pitch, speed and tone controls 44 as well as standard functions such as fade, base, treble, etc., for governing audio output. Marx appears to describe that a user may speed up or slow down the tempo of the music. Once beats are detected and known by the processor 12, the processor 12 can automatically

synchronize music defects to the next downbeat or the user can skip any given number of beats. Marx appears to describe that the tempo may be selected out of a range which encompasses most classes of popular dance music. In the preferred embodiment, the range is restricted to dance music having 81 to 160 BPM. This tempo can alternatively be selected for specific types of dance music such as swing, merenge, etc. Presumably, the selection is made by a user, even though it is not expressly stated. It was asserted in the Office Action that the user interface 36 is equivalent to the magnification designating means defined by claim 1. However, Marx does not describe a magnification designation means for magnifying the detected beats per minute, and then changing the tempo in accordance with the magnified BPM. Marx simply provides a conventional means for changing the tempo of an audio signal. An advantage of the present invention over the prior art is that it provides a user a much easier way of achieving a desired tempo. Marx is similar to the prior art discussed in the specification in that it describes that the tempo may be accelerated or decelerated but does not disclose or suggest a means for magnifying the detected BPM and then updated the tempo based on the magnified BPM. Thus, Applicants submit that Marx fails to show each and every element of claim 1, and therefore claims 2-8 which depend thereon. Accordingly, Applicants request that the rejection be withdrawn and that claims 1-8 be allowed.

In view of the above remarks, the Applicants respectfully submit that each of claims 1-8 recite subject matter which is neither disclosed nor suggested in the cited prior art. Applicants submit that this subject matter is more than sufficient to render the

claimed invention unobvious to a person of ordinary skill in the art. Applicants therefore request that each of claims 1-8 be found allowable, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account No. 01-2300.

Respectfully submitted,



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Brian A. Tollefson  
Registration No. 46,338

ARENT FOX KINTNER PLOTKIN & KAHN, PLLC  
1050 Connecticut Avenue, N.W., Suite 400  
Washington, D.C. 20036-5339  
Tel: (202) 857-6000  
Fax: (202) 638-4810

BAT:mnI